

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY  
OFFICE OF ENVIRONMENTAL SERVICES

STATEMENT OF BASIS<sup>1</sup>

PROPOSED PART 70 OPERATING PERMIT 1280-00141-V0

FLOPAM INC.  
PLAQUEMINE, IBERVILLE PARISH, LOUISIANA  
Agency Interest (AI) No. 166443  
Activity No. PER20090001

**I. APPLICANT**

The applicant is: Flopam Inc.  
Post Office Box 250  
Riceboro, Georgia 31323

Facility: Flopam Facility

SIC Code: 2899

Location: 26790 US Highway 405, on the west bank of the Mississippi River, approximately 6 miles east of Plaquemine, Iberville Parish. UTM coordinates are 678.20 kilometers East and 3349.40 kilometers North, Zone 15.

**II. PERMITTING AUTHORITY**

Louisiana Department of Environmental Quality  
Office of Environmental Services  
P.O. Box 4313  
Baton Rouge, Louisiana 70821-4313

**III. CONTACT INFORMATION**

Mr. Dan Nguyen  
P.O. Box 4313  
Baton Rouge, Louisiana 70821-4313  
Phone: (225) 219-3181

**IV. FACILITY BACKGROUND AND CURRENT PERMIT STATUS**

Flopam Inc. proposes to construct and operate a manufacturing complex at 26790 Highway 405, Plaquemine, Iberville Parish. This will be the initial Part 70 permit for the Facility.

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<sup>1</sup> 40 CFR 70.7(a)(5) and LAC 33:III.531.A.4 require the permitting authority to "provide a statement that sets forth the legal and factual basis for the proposed permit conditions of any permit issued to a Part 70 source, including references to the applicable statutory or regulatory provisions."

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### V. PROPOSED PERMIT/PROJECT INFORMATION

A permit application dated August 20, 2009 was received requesting a Part 70 operating permit. The application was deemed administratively complete in accordance with LAC 33:III.519.A on November 23, 2009. Pursuant to LAC 33:III.519.A.4, a notice of the completeness determination was published in *The Post-South*, Plaquemine, Louisiana, on December 24, 2009. Additional information dated November 20, December 4, 2009, January 7, and February 19, 2010 was also received.

#### Process Description

The proposed Flopam Facility will consist of the Acrylamide Plant, Powder Plant, Diallyldimethylammoniumchloride (DADMAC) Plant, Specialty Products Plant, Emulsion Plant, a Polyamine Plant, Dimethylamineoethylacrylate (ADAM) Plant, Chloromethylation (CM) Plant, Acrylamido Tertio Butyl Sulfonate (ATBS) Plant, and auxiliary and miscellaneous equipment. Production from the Acrylamide, CM, ADAM, and ATBS Plants will primarily be used as raw materials for other facility operations.

#### 1. Acrylamide Plant:

Acrylonitrile, dilute sodium acrylate solution, water, and biocatalyst will be fed to the reactors. Sodium hydroxide will be used to maintain desired pH. The products will be an aqueous acrylamide solution with traces of acrylonitrile and spent catalyst. Catalyst will be separated for disposal as necessary. Acrylamide products will be stored in day tanks and then pumped to bulk storage tanks which will be sparged with air to inhibit polymerization. Acrylamide will periodically be transferred offsite or used as raw materials for other processes. Water scrubbers will be used to control emissions from tanks and process areas. The Acrylamide Plant will consist of up to five production lines.

#### 2. Powder Plant:

The Powder Plant will use acrylamide, sodium hydroxide, acrylic acid, and cationic monomers to produce polyacrylamide powder flocculants. Raw materials will be mixed in a dissolution tank and then transferred to the reactor for polymerization. The gel product will be ground into small particles and dried. The dried product will be screened, bagged, and then shipped out to customers. Particulate emissions from screening, bagging, rebagging, truck loading, silos, and product handling operations will be controlled by dust collectors. The Powder Plant will consist of up to ten production lines.

#### 3. Diallyldimethylammoniumchloride (DADMAC) Plant:

Dimethylamine (DMA), allyl chloride (AC), and sodium hydroxide will be charged to a reactor to produce diallyldimethylammoniumchloride (DADMAC). Solids (salts) from the reaction mass will be removed while water and allyl alcohol will be recovered via distillation. Vent from the reactor may be condensed prior to combustion in the thermal oxidizer which will be followed by a water scrubber. DADMAC monomer will be transferred to a reactor for polymerization. The DADMAC polymer will be sent to

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storage tank and then packed in drums, totes, or shipped offsite in tank trucks. The DADMAC Plant will consist of up to two production lines.

#### **4. Specialty Products Plant:**

DADMAC, calcium chloride, and catalyst will be used to produce "base" at the Specialty Products Plant. The reaction mass will be neutralized using hydrochloric acid and caustic solution, concentrated, and stored in tanks. The reactors and the neutralization and adjustment tanks will be controlled by scrubbers. The Specialty Products Plant may be used as an emulsion production line.

#### **5. Emulsion Plant:**

Emulsified cationic, anionic, and nonionic polyacrylamide polymers will be produced at the Emulsion Plant. Raw materials, including acrylamide and a base, such as sodium hydroxide (for anionic polyacrylamide polymers), cationic monomer (for cationic polyacrylamide polymers) will be mixed in a dissolution tank and then transferred to the reactor along with oil, surfactant, and catalysts. The reaction mass will be filtered prior to storage or packaging. The Emulsion Plant will consist of up to ten production lines. Two lines will be designated to use ammonium hydroxide as the base and will be equipped with water scrubbers for odor control.

#### **6. Polyamine Plant:**

After charging the reactor with ethylenediamine (EDA) and dimethylamine (DMA), Epichlorohydrin (EPI) will be added to start the reaction. The polyamine product will be collected, stored in tanks prior to shipping or packaging. Reactor vent will be controlled by a water scrubber. The Polyamine Plant will consist of two production lines.

#### **7. Dimethylaminoethylacrylate (ADAM) Plant:**

ADAM will be produced via transesterification by reacting an Acrylate ester (methyl acrylate (MA) or ethyl acrylate (EA)) with an alcohol (dimethylaminoethanol (DMOH)) to produce the product ester (ADAM) and a co-product alcohol (methanol or ethanol). Raw material will be charged into a reactor. The reaction mass will be distilled to removed the alcohol co-product which will then be sold or burned in the on-site boilers. The product will be refined by distillation and then stored. Vents from the process will be controlled by a thermal oxidizer as required by 40 CFR 63 Subpart FFFF (MON).

#### **8. Chloromethylation (CM) Plant:**

The process will involve chloromethylation using methyl chloride (MeCl) and dimethylaminoethylacrylate (ADAM) or dimethylaminoethylmethacrylate (MADAM) to produce ADAM-MeCl or MADAM-MeCl, respectively. ADAM-MeCl and MADAM-MeCl are cationic monomers that will be used in other facility processes or sold as products. Vent from the reactor will be burned in the thermal oxidizer which will be followed by a water scrubber.

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**9. Acrylamido Tertio Butyl Sulfonate (ATBS) Plant:**

ATBS will primarily be produced as a raw material for other facility processes. Water, oleum, and acrylonitrile will be mixed. Isobutene will be added later to form ATBS. The slurry reaction mass will be filtered, washed, and dried. The dried ATBS will be conveyed to silos and then packaged. Acrylonitrile from various steps of the process will be recovered, neutralized, filtered, stripped, and stored for reuse. Vent from the process will be controlled by the ADAM thermal oxidizer. Particulate emissions from the ATBS conveyor, silos, and packaging operations will be controlled by dust collectors.

**10. Auxiliary and Miscellaneous Equipment:**

Auxiliary equipment will consist of up to ten 25.1 MM BTU/hr boilers and four ethylene glycol tanks for the chilled coolant system.

**VI. ATTAINMENT STATUS OF PARISH**

<u>Pollutant</u>	<u>Attainment Status</u>	<u>Designation</u>
PM <sub>2.5</sub>	Attainment	N/A
PM <sub>10</sub>	Attainment	N/A
SO <sub>2</sub>	Attainment	N/A
NO <sub>2</sub>	Attainment	N/A
CO	Attainment	N/A
Ozone <sup>2</sup>	Nonattainment	Moderate
Lead	Attainment	N/A

**VII. PERMITTED AIR EMISSIONS**

Sources of air emissions are listed on the "Inventories" page of the proposed permit. Estimated emissions of criteria pollutants from the facility, in tons per year (TPY), are as follows:

<u>Pollutant</u>	<u>Emissions</u>
PM	29.58
PM <sub>10</sub>	27.68
PM <sub>2.5</sub>	7.76
SO <sub>2</sub>	9.42
NO <sub>x</sub>	131.15
CO	207.92
VOC	127.34

<sup>2</sup> VOC and NO<sub>x</sub> are regulated as surrogates.

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PM<sub>10</sub> and VOC compounds classified as LAC 33:III.Chapter 51-regulated toxic air pollutants (TAP) are speciated below. This list encompasses all Hazardous Air Pollutants (HAP) regulated pursuant to Section 112 of the Clean Air Act. Note, however, all TAPs are not HAPs (e.g., ammonia, hydrogen sulfide).

<u>Pollutant</u>	<u>Emissions</u>
Acrylamide	8.057
Acrylic Acid	65.78
Acrylonitrile	8.455
Allyl Chloride	3.38
Epichlorohydrin	0.36
Ethyl Acrylate	1.24
n-Hexane	1.94
Methanol	1.00
Methyl Chloride	0.45
Ammonia	1.06
Chlorine	4.35
Hydrochloric Acid	2.08
Sulfuric Acid/SO <sub>3</sub>	0.02

The Facility is a major source of criteria pollutants, HAPs, and TAPs.

Permitted limits for individual emissions units and groups of emissions units, if applicable, are set forth in the tables of the proposed permit entitled "Emission Rates for Criteria Pollutants" and "Emission Rates for TAP/HAP & Other Pollutants." These tables are part of the permit.

Emissions calculations can be found in Appendix B of the permit application. The calculations address the manufacturer's specifications, fuel composition (e.g., sulfur content), emissions factors, and other assumptions on which the emissions limitations are based and have been reviewed by the permit writer for accuracy.

#### **General Condition XVII Activities**

This permit does not include any General Condition XVII activities.

#### **Insignificant Activities**

The emissions units or activities listed in Section IX of the proposed permit have been classified as insignificant pursuant to LAC 33:III.501.B.5. By such listing, the LDEQ exempts these sources or types of sources from the requirement to obtain a permit under LAC 33:III.Chapter 5. However, such emissions are considered when determining the facility's potential to emit for evaluation of applicable requirements.

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### VIII. REGULATORY APPLICABILITY

Regulatory applicability is discussed in three sections of the proposed permit: Section X (Table 1), Section XI (Table 2), and Specific Requirements. Each is discussed in more detail below:

#### Section X (Table 1): Applicable Louisiana and Federal Air Quality Requirements

Section X (Table 1) summarizes all applicable federal and state regulations. In the matrix, a "1" represents a regulation applies to the emissions unit. A "1" is also used if the emissions unit is exempt from the emissions standards or control requirements of the regulation, but monitoring, recordkeeping, and/or reporting requirements apply.

A "2" is used to note that the regulation has requirements that would apply to the emissions unit, but the unit is exempt from these requirements due to meeting a specific criterion, such as it has not been constructed, modified, or reconstructed since the regulation has been effective. If the specific criterion changes, the emissions unit will have to comply with the regulations at a future date. Each "2" entry is explained in Section XI (Table 2).

A "3" signifies that the regulation applies to this general type of source (e.g., furnace, distillation column, boiler, fugitive emissions, etc.), but does not apply to the particular emissions unit. Each "3" entry is explained in Section XI (Table 2).

If blank, the regulation clearly does not apply to this type of emissions unit.

#### Section XI (Table 2): Explanation for Exemption Status or Non-Applicability of a Source

Section XI (Table 2) of the proposed permit provides explanation for either the exemption status or non-applicability of given federal or state regulation cited by 2 or 3 in the matrix presented in Section X (Table 1).

#### Specific Requirements

Applicable regulations, as well as any additional monitoring, recordkeeping, and reporting requirements necessary to demonstrate compliance with both the federal and state terms and conditions of the proposed permit, are provided in the "Specific Requirements" section. Any operating limitations (e.g., on hours of operation or throughput) are also set forth in this section. Associated with each Specific Requirement is a citation of the federal or state regulation upon which the authority to include that Specific Requirement is based.

#### 1. **Federal Regulations**

##### 40 CFR 60 - New Source Performance Standards (NSPS)

The proposed boilers will subject to subpart Dc while several distillations operations vent will subject to Subpart NNN. Applicable emission standards, monitoring, test methods and procedures, recordkeeping, and reporting requirements are summarized in the "Specific Requirements" section of the proposed permit.

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### 40 CFR 61 – National Emission Standards for Hazardous Air Pollutants (NESHAP)

No NESHAP provisions are applicable to the Facility.

### 40 CFR 63 – Maximum Achievable Control Technology (MACT)

The following subparts are applicable at the Facility: A, G, SS, and FFFF. Applicable emission standards, monitoring, test methods and procedures, recordkeeping, and reporting requirements are summarized in the “Specific Requirements” section of the proposed permit.

### Clean Air Act §112(g) or §112(j) – Case-By-Case MACT Determinations

A case-by-case MACT determination pursuant to §112(g) or §112(j) of the Clean Air Act was not required.

### 40 CFR 64 – Compliance Assurance Monitoring (CAM)

Per 40 CFR 64.2(a), CAM applies to each pollutant-specific emissions unit (PSEU) that 1) is subject to an emission limitation or standard, 2) uses a control devices to achieve compliance, and 3) has potential pre-control device emissions that are equal to or greater than 100 percent of the amount, in TPY, required for a source to be classified as a major source. None of the equipment at the proposed facility will subject to the CAM.

### Acid Rain Program

The Acid Rain Program, 40 CFR Part 72 – 78, applies to the fossil fuel-fired combustion devices listed in Tables 1-3 of 40 CFR 73.10 and other utility units, unless a unit is determined not to be an affected unit pursuant to 40 CFR 72.6(b). LDEQ has incorporated the Acid Rain Program by reference at LAC 33:III.505. Facility is not subject to the Acid Rain Program.

## **2. SIP-Approved State Regulations**

Applicable state regulations are also noted in Section X (Table 1) of the proposed permit. Some state regulations have been approved by the U.S. Environmental Protection Agency (EPA) as part of Louisiana’s State Implementation Plan (SIP). These regulations are referred to as “SIP-approved” and are enforceable by both LDEQ and EPA. All LAC 33:III.501.C.6 citations are federally enforceable unless otherwise noted.

## **3. State-Only Regulations**

Individual chapters or sections of LAC 33:III noted by an asterisk in Section X (Table 1) are designated “state-only” pursuant to 40 CFR 70.6(b)(2). Terms and conditions of the proposed permit citing these chapters or sections are not SIP-approved and are not subject to the requirements of 40 CFR Part 70. These terms and conditions are enforceable by LDEQ, but not EPA. All conditions not designated as “state-only” are presumed to be federally enforceable.

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State MACT (LAC 33:III,Chapter 51)

Flopam Facility is a major source of LAC 33:III,Chapter 51 regulated TAP. The owner or operator of any major source that emits or is permitted to emit a Class I or Class II TAP at a rate equal to or greater than the Minimum Emission Rate (MER) listed for that pollutant in LAC 33:III.5112 shall control emissions of that TAP to a degree that constitutes Maximum Achievable Control Technology (MACT), except that compliance with an applicable federal standard promulgated by the U.S. EPA in 40 CFR Part 63 shall constitute compliance with MACT for emissions of toxic air pollutants. Applicable Part 63 standards are addressed in Section VIII.I of this Statement of Basis. MACT is not required for Class III TAPs; however, the impact of all TAP emissions must be below their respective Ambient Air Standards (AAS).

MACT determinations were made pursuant to Chapter 51 for the equipment listed in CRG0001, CRG0002, CRG0003, CRG0004, CRG0006, EQT0341, and EQT0342. State MACT requirements are cited as LAC 33:III.5109.A in the proposed permit.

**IX. NEW SOURCE REVIEW (NSR)****1. Prevention of Significant Deterioration (PSD)**

The facility's source category is listed in Table A of the definition of "major stationary source" in LAC 33:III.509. As such, the PSD major source threshold is 100 TPY (of any regulated NSR pollutant).

Flopam Facility will be a major stationary source under the PSD program, LAC 33:III.509. Emissions from the proposed facility are as follows:

<u>Pollutant</u>	<u>Project Increase</u>	<u>PSD Significance Level</u>	<u>Netting Required?</u>
PM	27.63	25	Yes
PM <sub>10</sub>	25.66	15	Yes
PM <sub>2.5</sub>	7.76	10	No
SO <sub>2</sub>	9.42	40	No
NO <sub>x</sub>	131.15	40	Yes
CO	207.92	100	Yes
VOC	127.34	40	Yes

NO<sub>x</sub> and CO emissions from the proposed facility will be more than the PSD major source threshold. Emissions of PM and PM<sub>10</sub> will be more than the respective PSD significance levels. A PSD analysis is required for PM, PM<sub>10</sub>, NO<sub>x</sub>, and CO emissions. Affected emission points and their proposed emissions are listed in Table IV of Permit PSD-I A-747. VOC is a precursor of ozone which is subject to the Nonattainment New Source Review (NNSR). Therefore, VOC emissions are not subject to a PSD review.

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### BACT

Under current PSD regulations, an analysis of "top down" BACT is required for the control of each regulated pollutant emitted from a new major stationary source in excess of the specified significant emission rates. The top down approach to the BACT process involves determining the most stringent control technique available for a similar or identical source. If it can be shown that this level of control is infeasible based on technical, environmental, energy, and/or cost considerations, then it is rejected and the next most stringent level of control is determined and similarly evaluated. This process continues until a control level is arrived at which cannot be eliminated for any technical, environmental, or economic reason. A technically feasible control strategy is one that has been demonstrated to function efficiently on identical or similar processes. Additionally, BACT shall not result in emissions of any pollutant which would exceed any applicable standard of 40 CFR Parts 60 and 61.

Flopam Inc. will control NO<sub>x</sub> emissions from the facility to the LAER to fulfill the BACT requirements for NO<sub>x</sub>. NO<sub>x</sub> emissions from the boilers will be controlled by Low NO<sub>x</sub> burners. Good equipment design and proper combustion practices are determined as BACT for CO and particulate (PM/PM<sub>10</sub>) emissions from combustion devices and NO<sub>x</sub> emissions from the dryers and thermal oxidizers. Particulate emissions from the Powder Plant will be controlled by dust filters

A more thorough discussion of the BACT selection process can be found in PSD-LA-747. BACT and any other associated monitoring, recordkeeping, and reporting requirements necessary to determine compliance with the PSD permit are cited as "LAC 33:III.509" in the proposed Title V permit.

### Air Quality Impact Analyses

Prevention of Significant Deterioration regulations require an analysis of existing air quality for those pollutants emitted in significant amounts from a proposed new major stationary source. PM<sub>10</sub>, NO<sub>2</sub>, and CO are pollutants of concern in this case.

Modeling was conducted using AERMOD pursuant to the protocol approved by the Office of Environmental Assessment, Air Quality Assessment Division on September 15, 2009.

### *Screening Modeling*

Pollutant	Averaging Period	Preliminary Screening Concentration (µg/m <sup>3</sup> )	Level of Significant Impact (µg/m <sup>3</sup> )	Significant Monitoring Concentration (µg/m <sup>3</sup> )	Preconstruction Monitoring Required?	Refined Modeling Required?
PM <sub>10</sub>	24-hour	4.97	5	10	No	No
NO <sub>2</sub>	Annual	2.6	1	14	No	Yes
CO	1-hour	95.7	2000	-		No
	8-hour	55.0	500	575	No	No

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Modeling of PM<sub>10</sub> and CO emissions from the proposed project indicates that the maximum offsite ground level concentrations of these pollutants will be below their respective PSD ambient significance levels and preconstruction monitoring levels. Modeling of NO<sub>2</sub> emissions from the proposed project indicates that the maximum offsite ground level concentrations of NO<sub>2</sub> will be above the PSD ambient significance level, but below the preconstruction monitoring level. Therefore, refined NAAQS modeling is required only for NO<sub>2</sub> emissions. Pre-construction monitoring and increment consumption analyses were not required for PM<sub>10</sub> and CO emissions.

*Refined Modeling*

Pollutant	Averaging Period	Modeled + Background Concentration (µg/m <sup>3</sup> )	NAAQS (µg/m <sup>3</sup> )	Modeled PSD Increment Consumption (µg/m <sup>3</sup> )	Allowable Class II PSD Increment (µg/m <sup>3</sup> )
NO <sub>x</sub>	Annual	64.1	100	4.6	25

As shown above, refined modeling indicates compliance with the NAAQS and PSD Increments.

VOC emissions from the proposed facility will exceed 100 tons per year; therefore, an ambient air quality analysis and preconstruction monitoring are required for ozone. Since VOC emissions from the facility will be more than 100 tons/year, preconstruction monitoring is required. However, the proposed facility will be located within the Baton Rouge Area ozone non-attainment and VOC emissions from the proposed facility will be offset. Therefore, the net impacts of VOC emissions on air quality will be minimal. Flopam Inc. utilizes data from the nearest LDEQ ozone monitoring station in Carville to fulfill this requirement. Emissions of PM<sub>2.5</sub> will be less than the PSD significance level. Modeling is not required for PM<sub>2.5</sub> emissions.

See Table II – Air Quality Analysis Summary of the proposed PSD permit for more detailed modeling results.

## 2. Nonattainment New Source Review (NNSR)

Flopam Facility will be a major stationary source under the NNSR program, LAC 33:III.504. The emissions increases associated with the proposed facility are as follows:

<u>Pollutant</u>	<u>Project Increase</u>	<u>NNSR Significance Level</u>	<u>Netting Required?</u>
NO <sub>x</sub>	131.15	25 (10 for HRVOC) <sup>3</sup>	Yes
VOC	120.13	25 (10 for HRVOC)	Yes

<sup>3</sup> See LAC 33:III.504.M.1.b. Highly reactive VOC (HRVOC) include 1,3-butadiene, butenes (all isomers), ethylene, and propylene.

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Because the Flopam Facility is a proposed unit, there are no creditable reductions during the contemporaneous period; therefore, NNSR applies.

A list of affected emissions units and potential to emit for each emissions unit can be found in Section XIII of the Title V permit.

Lowest Achievable Emission Rate (LAER)

Flopam Inc. will control NO<sub>x</sub> and VOC emissions from the facility to the LAER. NO<sub>x</sub> emissions from the boilers will be controlled by Low NO<sub>x</sub> burners. Good equipment design and proper combustion practices are determined as LAER for NO<sub>x</sub> emissions from the dryers and thermal oxidizers. VOC emissions from the process equipment will be controlled by thermal oxidizers, scrubbers, vapor balance, insulation and cooling, and as required by 40 CFR 65 Subpart F, 40 CFR 63 Subpart G and Subpart FFFF.

LAER for NO <sub>x</sub> Emissions				
EQT	Equipment	Emissions, tpy	LAER Selection	LAER Limits
0082 - 0101	Powder Plants	10.51 per plant	Good equipment design and proper combustion techniques	2.40 lbs/hour/plant
0354	Thermal Oxidizer: TO-DAD1	5.37	Good equipment design and proper combustion techniques	0.133 lbs/MM BTU
0372	Thermal Oxidizer TO-AD1	4.00		
0373	Thermal Oxidizer TO-AD1	4.00		
0383	Thermal Oxidizer TO-CM1	4.28		
0402 -0411	Boilers	1.24	ULNB	0.015 lbs/MM BTU

LAER for VOC Emissions				
EQT	Equipment	Emissions, tpy	LAER Selection	LAER Limits
0001 - 0005	Sodium Acrylate Prep Tanks	< 0.01	No additional control	
0006 - 0010	Acrylic Acid Tanks	0.06 each	Insulating and cooling	
0011 - 0025	Acrylamide Day Tanks	< 0.01 each	Scrubbers (0041-0045)	
0026 - 0035	Acrylamide Storage Tanks	< 0.01 each	Scrubber (0051)	
0036 - 0040	Equipment Downstream of Reactors Handling Acrylamide	< 0.01 each	Scrubbers (0041-0045)	
0046 - 0050	Acrylamide Reactors/Scrubbers	0.07 each	Scrubbers	
0052 - 0061 0062 - 0071 0072 - 0081 0082 - 0101	Powder Plant: Dissolution Tanks Reactors Grinders Dryers	8.80 each plant	good equipment design and proper operations	
0312 - 0315	Acrylic Acid Tanks	0.88 each	Insulating and cooling	
0316 - 0320 0343, 0347	Acrylamide Day Tanks	< 0.01 each	Insulating and cooling	

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LAER for VOC Emissions				
EQT	Equipment	Emissions, tpy	LAER Selection	LAER Limits
0321, 0322 0331, 0332	Emulsion Plant Dissolution Tanks and Reactors	0.53 total	Scrubber (0341)	
0323 – 0330 0333 – 0340	Emulsion Plant Dissolution Tanks and Reactors	1.10 total	No additional control	
0344	Specialty Products – Base Reactors	0.02	No additional control	
0348 - 0353	DADMAC Plant Reactors, Receivers, Separator, Allyl Alcohol Tank, and Distillation Column	2.31 total	Thermal Oxidizer (0354)	
0354	Thermal Oxidizer: TO-DAD1	2.31	Good equipment design and proper combustion techniques	0.005 lbs/MM BTU 99% control efficiency
0372	Thermal Oxidizer: TO-AD1	7.17		
0373	Thermal Oxidizer: TO-AD2	7.17		
0383	Thermal Oxidizer: TO-AD3	0.42		
0356, 0357	Polyamine Plant Reactors	< 0.01	Scrubber (0358)	
0359	Polyamine Plant Epichlorohydrin Tank	0.14	Vapor Balance	
0360 – 0371 0436	ADAM and ATBS Plants: Tanks, Reactors, Dryer, and Distillation Columns	7.17 total	Thermal Oxidizers (0372 and/or 0373)	
0374, 0375	Alcohol Co-Product Tanks	0.21 each	Vapor Balance	
0376	Hexane Tank	0.38	Vapor Balance	
0377, 0378	Dimethylaminoethanol Tanks	0.05 each	Vapor Balance	
0382	Chloromethylation Plant	0.42	Thermal Oxidizer (0383)	
0402 -0411	Boilers	0.66 each	Good equipment design and proper combustion techniques	0.003 lbs/MM BTU for natural gas or 0.008 lbs/MM BTU for alcohol fired
0412 – 0435 0457 - 0481	Pressurized Tanks		Pressurized	
0437	Solvent Cold Cleaners		Equipped with cover	
0438 – 0455 0484 - 0584	Storage Tanks	< 0.01 each	No additional control	
0585 - 0588	PolyDADMAC Reactors	< 0.01 each	No additional control	
FUG0001	Equipment Leaks	8.77	40 CFR 65 Subpart F	

Offsets

See the attached "Analysis of Validity of Emission Reductions as ERC" document.

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**3. Notification of Federal Land Managers**

The Federal Land Managers (FLM) are responsible for evaluating a facility's projected impact on the Air Quality Related Values (AQRV) (e.g., visibility, sulfur and nitrogen deposition, any special considerations concerning sensitive resources, etc.<sup>4</sup>) and recommending that LDEQ either approve or disapprove the facility's permit application based on anticipated impacts. The FLM also may suggest changes or conditions on a permit. However, LDEQ makes the final decision on permit issuance. The FLM also advises reviewing agencies and permit applicants about other FLM concerns, identifies AQRV and assessment parameters for permit applicants, and makes ambient monitoring recommendations.

If LDEQ receives a PSD or NNSR permit application for a facility that "may affect" a Class I area, the FLM charged with direct responsibility for managing these lands is notified.

The meaning of the term "may affect" is interpreted by EPA policy to include all major sources or major modifications which propose to locate within 100 kilometers (km) of a Class I area. However, if a major source proposing to locate at a distance greater than 100 km is of such size that LDEQ or the FLM is concerned about potential impacts on a Class I area, LDEQ can ask the applicant to perform an analysis of the source's potential emissions impacts on the Class I area. This is because certain meteorological conditions, or the quantity or type of air emissions from large sources located further than 100 km, may cause adverse impacts. In order to determine whether a source located further than 100 km may affect a Class I area, LDEQ uses the Q/d approach.

Q/d refers to the ratio of the sum of the net emissions increase (in tons) of PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>, and H<sub>2</sub>SO<sub>4</sub> to the distance (in kilometers) of the facility from the nearest boundary of the Class I area.

$$Q/d = \frac{PM_{10(NEI)} + SO_{2(NEI)} + NO_{X(NEI)} + H_2SO_{4(NEI)}^5}{\text{Class I km}}$$

Where:

PM <sub>10(NEI)</sub>	=	net emissions increase of PM <sub>10</sub>
SO <sub>2(NEI)</sub>	=	net emissions increase of SO <sub>2</sub>
NO <sub>x(NEI)</sub>	=	net emissions increase of NO <sub>x</sub>
H <sub>2</sub> SO <sub>4(NEI)</sub>	=	net emissions increase of H <sub>2</sub> SO <sub>4</sub>
Class I km	=	distance to nearest Class I area (in kilometers)

<sup>4</sup> See <http://www2.nature.nps.gov/air/Permits/ARIS/AQRV.cfm>.

<sup>5</sup> If both NNSR and PSD review are required, the higher of the two "net emissions increase" values has been selected. The net emissions increase for NNSR and PSD purposes may be different due to differing contemporaneous periods. If the net emissions increase of any pollutant is negative, the value used in the equation has been set to zero. If the project did not trigger a netting analysis, LDEQ uses the project increase (see §504.A.3 (NNSR) and §509.A.4 (PSD)). In this case, the value will be less than the pollutant's significance level.

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If  $Q/d \geq 4$ , LDEQ will formally notify the FLM in accordance with LAC 33:III.504.E.1 - LAC 33:III.509.P.1.

In this instance,

$$Q/d = \frac{25.66 + 9.42 + 131.15 + 0.01}{207} = 0.80$$

Therefore, LDEQ has determined that the proposed project will not adversely impact visibility in Breton National Wildlife Refuge, the nearest Class 1 area.

#### 4. Reasonable Possibility

As previously mentioned, increases of PM/PM<sub>10</sub>, NO<sub>x</sub>, CO, and VOC emissions will be more than the PSD or NNSR significance levels. PSD/NNSR analysis is required. SO<sub>2</sub> emissions will be less than 50% of the PSD significance level. There is no "reasonable possibility" that the proposed project may result in a significant SO<sub>2</sub> emissions increase.

#### X. ADDITIONAL MONITORING AND TESTING REQUIREMENTS

In addition to the monitoring and testing requirements set forth by applicable state and federal regulations (see Section VIII of this Statement of Basis), a number of "LAC 33:III.507.H.1.a" and/or "LAC 33:III.501.C.6" conditions may appear in the "Specific Requirements" section of the proposed permit. These conditions have been added where no applicable regulation exists or where an applicable regulation does not contain sufficient monitoring, recordkeeping, and/or reporting provisions to ensure compliance. LAC 33:III.507.H.1.a provisions, which may include recordkeeping requirements, are intended to fulfill Part 70 periodic monitoring obligations under 40 CFR 70.6(a)(3)(i)(B).

ID	Description	Parameters	Method	Frequency
EQT0041 - EQT0051 EQT0341	Scrubbers	Flow Rate	Flow meter	Every 4 hours
EQT0257 - EQT0268	Dust Filters	Particulates	Visual	Daily

#### XI. OPERATIONAL FLEXIBILITY

##### Emissions Caps

An emissions cap is a permitting mechanism to limit allowable emissions of two or more emissions units below their collective potential to emit (PTE). The proposed permit does not establish an emissions cap.

##### Alternative Operating Scenarios

LAC 33:III.507.G.5 allows the owner or operator to operate under any operating scenario incorporated in the permit. Any reasonably anticipated alternative operating scenarios may be identified by the owner or operator through a permit application and included in the permit. The proposed permit does not include an alternative operating scenario.

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### Streamlined Requirements

When applicable requirements overlap or conflict, the permitting authority may choose to include in the permit the requirement that is determined to be most stringent or protective as detailed in EPA's "White Paper Number 2 for Improved Implementation of the Part 70 Operating Permits Program" (March 5, 1996). The overall objective is to determine the set of permit terms and conditions that will assure compliance with all applicable requirements for an emissions unit or group of emissions units so as to eliminate redundant or conflicting requirements. The proposed permit does not contain streamlined provisions.

### Louisiana Consolidated Fugitive Emission Program (LCFEP)

The Flopam Facility does not comply with a streamlined equipment leak monitoring program.

## **XII. PERMIT SHIELD**

A permit shield, as described in 40 CFR 70.6(f) and LAC 33:III.507.1, provides an "enforcement shield" which protects the facility from enforcement action for violations of applicable federal requirements. It is intended to protect the facility from liability for violations if the permit does not accurately reflect an applicable federal or federally enforceable requirement. The proposed permit does not establish a permit shield.

## **XIII. IMPACTS ON AMBIENT AIR**

Modeling of PM<sub>10</sub>, NO<sub>x</sub>, CO, and VOC is addressed in Section IX.1 of this Statement of Basis. Modeling demonstrates that emissions from the Flopam Facility will not violate National Ambient Air Quality Standards (NAAQS) for criteria pollutants and Louisiana Ambient Air Standards (AAS) for toxic air pollutants. Therefore, Flopam Facility will not cause air quality impacts which could adversely affect human health or the environment.

Pollutant	Time Period	Calculated Maximum Ground Level Concentration ( $\mu\text{g}/\text{m}^3$ )	(b)AAS ( $\mu\text{g}/\text{m}^3$ )
Acrylamide	Annual	0.077	0.08
Acrylic Acid	8 hour	(a) 84.8	140
Acrylonitrile	Annual	(a) 0.80	1.47
Allyl Chloride	8 hour	(a) 18.9	71.4
Ammonia	8 hour	(a) 79.5	640
Chlorine	8 hour	(a) 9.9	35.7
Ethyl Acrylate	8 hour	(a) 12.9	476
Hydrochloric Acid	8 hour	(a) 15.0	180
(a) Screen values			
(b) Ambient air standard set forth in LAC 33:III.5112			

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### **XIV. COMPLIANCE HISTORY AND CONSENT DECREES**

Flopam Inc. is proposing to construct and operate the Facility. Thus, there are no enforcement actions pertaining to the facility.

### **XV. REQUIREMENTS THAT HAVE BEEN SATISFIED**

This permit is for a proposed facility. There is no requirements that has been satisfied.

### **XVI. OTHER REQUIREMENTS**

Executive Order No. BJ 2008-7 directs all state agencies to administer their regulatory practices, programs, contracts, grants, and all other functions vested in them in a manner consistent with Louisiana's Comprehensive Master Plan for a Sustainable Coast and public interest to the maximum extent possible. If a proposed facility or modification is located in the Coastal Zone, LDEQ requires the applicant to document whether or not a Coastal Use Permit is required, and if so, whether it has been obtained. Coastal Use Permits are issued by the Coastal Management Division of the Louisiana Department of Natural Resources (LDNR).

The facility is not located in the Coastal Zone; therefore, a Coastal Use Permit is not required.

### **XVII. PUBLIC NOTICE/PUBLIC PARTICIPATION**

Written comments, written requests for a public hearing, or written requests for notification of the final decision regarding this permit action may be submitted to:

Ms. Soumaya Ghosn  
LDEQ, Public Participation Group  
P.O. Box 4313  
Baton Rouge, Louisiana 70821-4313

Written comments and/or written requests must be received prior to the deadline specified in the public notice. If LDEQ finds a significant degree of public interest, a public hearing will be held. All comments will be considered prior to a final permit decision.

LDEQ will send notification of the final permit decision to the applicant and to each person who has submitted written comments or a written request for notification of the final decision.

The permit application, proposed permit, and this Statement of Basis are available for review at LDEQ, Public Records Center, Room 127, 602 North 5th Street, Baton Rouge, Louisiana. Viewing hours are from 8:00 a.m. to 4:30 p.m., Monday through Friday (except holidays). Additional copies may be viewed at the local library identified in the public notice. The available information can also be accessed electronically via LDEQ's

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Electronic Document Management System (EDMS) on LDEQ's public website, [www.deq.louisiana.gov](http://www.deq.louisiana.gov).

Inquiries or requests for additional information regarding this permit action should be directed to the contact identified on page 1 of this Statement of Basis.

Persons wishing to be included on the public notice mailing list or for other public participation-related questions should contact LDEQ's Public Participation Group at P.O. Box 4313, Baton Rouge, LA 70821-4313; by e-mail at [maillistrequest@ldeq.org](mailto:maillistrequest@ldeq.org); or contact LDEQ's Customer Service Center at (225) 219-LDEQ (219-5337). Alternatively, individuals may elect to receive public notices via e-mail by subscribing to LDEQ's Public Notification List Service at [http://www.doa.louisiana.gov/oes/listservpage/ldeq\\_pn\\_listserv.htm](http://www.doa.louisiana.gov/oes/listservpage/ldeq_pn_listserv.htm).

Permit public notices can be viewed at LDEQ's "Public Notices" webpage, <http://www.deq.louisiana.gov/apps/pubNotice/default.asp>. Electronic access to each proposed permit and Statement of Basis current on notice is also available on this page. General information related to public participation in permitting activities can be viewed at [www.deq.louisiana.gov/portal/tabid/2198/Default.aspx](http://www.deq.louisiana.gov/portal/tabid/2198/Default.aspx).

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## APPENDIX A - ACRONYMS

AAS	Ambient Air Standard (LAC 33:III.Chapter 51)
AP-42	EPA document number of the Compilation of Air Pollutant Emission Factors
BACT	Best Available Control Technology
BTU	British Thermal Units
CAA	Clean Air Act
CAAA	Clean Air Act Amendments
CAM	Compliance Assurance Monitoring, 40 CFR 64
CEMS	Continuous Emission Monitoring System
CMS	Continuous Monitoring System
CO	Carbon monoxide
COMS	Continuous Opacity Monitoring System
CFR	Code of Federal Regulations
EI	Emissions Inventory (LAC 33:III.919)
EPA	(United States) Environmental Protection Agency
EIQ	Emission Inventory Questionnaire
ERC	Emission Reduction Credit
FR	Federal Register or Fixed Roof
H <sub>2</sub> S	Hydrogen sulfide
H <sub>2</sub> SO <sub>4</sub>	Sulfuric acid
HAP	Hazardous Air Pollutants
Hg	Mercury
HON	Hazardous Organic NESHAP
IBR	Incorporation by Reference
LAER	Lowest Achievable Emission Rate
LDEQ	Louisiana Department of Environmental Quality
M	Thousand
MM	Million
MACT	Maximum Achievable Control Technology
MEK	Methyl ethyl ketone
MIK	Methyl isobutyl ketone
MSDS	Material Safety Data Sheet
MTBE	Methyl tert-butyl ether
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industrial Classification System (replacement to SIC)
NESHAP	National Emission Standards for Hazardous Air Pollutants
NMOC	Non-Methane Organic Compounds

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NOx	Nitrogen Oxides
NNSR	Nonattainment New Source Review
NSPS	New Source Performance Standards
NSR	New Source Review
OEA	LDEQ Office of Environmental Assessment
OEC	LDEQ Office of Environmental Compliance
OES	LDEQ Office of Environmental Services
PM	Particulate Matter
PM10	Particulate Matter less than 10 microns in nominal diameter
PM2.5	Particulate Matter less than 2.5 microns in nominal diameter
ppm	parts per million
ppmv	parts per million by volume
ppmw	parts per million by weight
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
RACT	Reasonably Available Control Technology
RBLC	RACT-BACT-LAER Clearinghouse
RMP	Risk Management Plan (40 CFR 68)
SICC	Standard Industrial Classification Code
SIP	State Implementation Plan
SO2	Sulfur Dioxide
SOCMI	Synthetic Organic Chemical Manufacturing Industry
TAP	Toxic Air Pollutants (LAC 33:III.Chapter 51)
TOC	Total Organic Compounds
TPY	Tons Per Year
TRS	Total Reduced Sulfur
TSP	Total Suspended Particulate
µg/m <sup>3</sup>	Micrograms per Cubic Meter
UTM	Universal Transverse Mercator
VOC	Volatile Organic Compound
VOL	Volatile Organic Liquid
VRU	Vapor Recovery Unit

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### APPENDIX B – GLOSSARY

*Best Available Control Technologies (BACT)* – an emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this Part (Part III) which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

*CAM - Compliance Assurance Monitoring* – A federal air regulation under 40 CFR Part 64.

*Carbon Monoxide (CO)* – (Carbon monoxide) a colorless, odorless gas produced by incomplete combustion of any carbonaceous (gasoline, natural gas, coal, oil, etc.) material.

*Cooling Tower* – A cooling system used in industry to cool hot water (by partial evaporation) before reusing it as a coolant.

*Continuous Emission Monitoring System (CEMS)* – The total combined equipment and systems required to continuously determine air contaminants and diluent gas concentrations and/or mass emission rate of a source effluent.

*Cyclone* – A control device that uses centrifugal force to separate particulate matter from the carrier gas stream.

*Federally Enforceable Specific Condition* – A federally enforceable specific condition written to limit the potential to Emit (PTE) of a source that is permanent, quantifiable, and practically enforceable. In order to meet these requirements, the draft permit containing the federally enforceable specific condition must be placed on public notice and include the following conditions:

- A clear statement of the operational limitation or condition which limits the source's potential to emit;
- Recordkeeping requirements related to the operational limitation or condition;
- A requirement that these records be made available for inspection by LDEQ personnel;
- A requirement to report for the previous calendar year.

*Grandfathered Status* – those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

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*Lowest Achievable Emission Rate (LAER)* – for any source, the more stringent rate of emissions based on the following:

- a. the most stringent emissions limitation that is contained in the implementation plan of any state for such class or category of major stationary source, unless the owner or operator of the proposed stationary source demonstrates that such limitations are not achievable; or
- b. the most stringent emissions limitation that is achieved in practice by such class or category of stationary source. This limitation, when applied to a modification, means the lowest achievable emissions rate for the new or modified emissions units within the stationary source. In no event shall the application of this term permit a proposed new or modified major stationary source to emit any pollutant in excess of the amount allowable under an applicable new source standard of performance.

*NESHAP* – National Emission Standards for Hazardous Air Pollutants – Air emission standards for specific types of facilities, as outlined in 40 CFR Parts 61 through 63.

*Maximum Achievable Control Technology (MACT)* – the maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

*NSPS* – New Source Performance Standards – Air emission standards for specific types of facilities, as outlined in 40 CFR Part 60.

*New Source Review (NSR)* – a preconstruction review and permitting program applicable to new or modified major stationary sources of criteria air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C (“Prevention of Significant Deterioration of Air Quality”) and D (“Nonattainment New Source Review”).

*Nonattainment New Source Review (NNSR)* – a New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) set forth at 40 CFR Part 50. NNSR is designed to ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

*Organic Compound* – any compound of carbon and another element. Examples: methane (CH<sub>4</sub>), ethane (C<sub>2</sub>H<sub>6</sub>), carbon disulfide (CS<sub>2</sub>).

*Part 70 Operating Permit* – also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507.

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*PM<sub>10</sub>* particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

*Potential to Emit (PTE)* – the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

*Prevention of Significant Deterioration (PSD)* – a New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

*Selective Catalytic Reduction (SCR)* – A non-combustion control technology that destroys NO<sub>x</sub> by injecting a reducing agent (e.g., ammonia) into the flue gas that, in the presence of a catalyst (e.g., vanadium, titanium, or zeolite), converts NO<sub>x</sub> into molecular nitrogen and water.

*Sulfur Dioxide (SO<sub>2</sub>)* – An oxide of sulphur.

*TAP* – LDEQ acronym for toxic air pollutants regulated under LAC 33 Part III, Chapter 51, Tables 1 through 3.

*“Top Down” Approach* – An approach which requires use of the most stringent control technology found to be technically feasible and appropriate based on environmental, energy, economic, and cost impacts.

*Title V permit* – see Part 70 Operating Permit.

*Volatile Organic Compound (VOC)* – any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the Administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.